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(54) Title: A WAVELENGTH-DIVISION-MULTIPLEXING PASSIVE OPTICAL NETWORK UTILIZING FIBER FAULT DETECTORS AND/OR WAVELENGTH TRACKING COMPONENTS

(57) **Abstract:** Various methods, systems, and apparatuses is described in which a passive-opticalnetwork includes a first multiplexer/demultiplexer, a second multiplexer/demultiplexer, a wavelength tracking component, and a transmission wavelength controller. The first multiplexer/demultiplexer is located in a first location. The second multiplexer/demultiplexer is located in a second location remote from the first location. The wavelength tracking component determines the difference between the transmission band of wavelengths of the first multiplexer/demultiplexer and the second multiplexer/demultiplexer to provide a control signal to match the transmission band of wavelengths of the first multiplexer/demultiplexer and the second multiplexer/demultiplexer. The transmission wavelength controller alters an operating parameter of the first multiplexer/demultiplexer based on the control signal to control the transmission band of wavelengths of the first multiplexer/demultiplexer.

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